REMARKS

I. Introduction

Claims 1 and 3 to 14 are currently pending in this application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

II. Rejection of Claims 1, 3 to 9 and 11 to 14 Under 35 U.S.C. § 102(b)

Claims 1, 3 to 9 and 11 to 14 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,718,999 ("Suzuki et al."). Applicants respectfully submit that Suzuki et al. do not anticipate the present claims for the following reasons.

Claim 1 relates to a planar sensor element for determining at least one gas component and recites that the planar sensor element includes a layer structure. Claim 1 further recites that the layer structure includes a measuring cell layer, a covering layer, a heating element generating a heating power and a layer-shaped heating conductor embedded in the heating element in a layer place of the layer structure. Claim 1 further recites that the layer plane is at least approximately centered with respect to the sensor element. Claim 1 further recites that the covering layer does not form part of an oxygen pump cell or an oxygen concentration cell.

Claim 13 relates to a planar sensor element for determining at least one gas component. Claim 13 recites that the planar sensor element includes a layer structure. Claim 13 further recites that the layer structure includes at least one of an oxygen pump layer and an oxygen concentration layer, a covering layer, a heating element generating a heating power and a layer-shaped heating conductor being embedded in the heating element in a layer plane of the layer structure. Claim 13 further recites that the layer plane is at least approximately centered with respect to the sensor element and that the covering layer does not form a part of another oxygen pump cell or another oxygen concentration cell.

Claim 14 relates to a planar sensor element for determining at least one gas component. Claim 14 recites that the planar sensor element includes a layer structure. Claim 14 further recites that the layer structure includes a measuring cell layer having at least one surface, a covering layer, a heating element generating a heating power, a layer-shaped heating conductor being embedded in the heating element in a layer plane of the layer structure and at least one electrode, each electrode arranged on a respective surface of the measuring cell layer. Claim 14 further recites that the layer-shaped heating conductor is

arranged in a layer plane of the layer structure to obtain an at least approximately homogeneous distribution of the heating power over a cross-section of the sensor element perpendicular to the layer structure. Claim 14 further recites that the layer plane is at least approximately centered with respect to the sensor element and that the covering layer does not form part of an oxygen pump cell or an oxygen concentration cell.

Claims 1, 13 and 14 have been amended herein without prejudice to recite that the heating element is disposed ***directly*** between the measuring cell layer and the covering layer. Support for this amendment may be found, for example, in Figure 1.

Suzuki et al. purportedly relate to an air-fuel ratio detector. Suzuki et al. state that the detector performs a stoichiometric function. See col. 3, lines 38 to 39. Suzuki et al. further state that a part of the oxygen gas flowing into the diffusion chamber 128 at the diffusion rate-determining speed through the diffusion path 130, is reduced to oxygen ions (O--) at the cathode 123, which then moves towards the oxygen reference electrode 126 inside the zirconia solid electrolyte 120, is oxidized to oxygen gas at this reference oxygen electrode 1126 and is thereafter emitted into the diffusion chamber 129. See col. 3, lines 44 to 52. As can be seen in Figure 2, the above described gas path is shown as an arrow beginning at electrode 123 and ending at electrode 126.

The Office Action alleges that Suzuki et al. disclose a covering layer, as recited in claims 1, 13 and 14. The Office Action asserts that the bottom most portion of sensor 120 qualifies as a covering layer because it allegedly does not function as part of the oxygen pump or oxygen concentration cell. Applicants respectfully submit that the bottom most portion of Suzuki et al. detector 120 does function as at least one of a oxygen pump and concentration cell. As indicated above, oxygen flows through the bottom most portion of sensor 120, the alleged "covering layer,"along its path to electrode 126, as designated by the arrow in Figure 2. Therefore, Suzuki et al. do not disclose, or even suggest, a covering layer, which does not form part of an oxygen pump cell or an oxygen concentration cell.

Notwithstanding the above, claims 1, 13 and 14 have been amended herein without prejudice to recite that the heating element is disposed ***directly*** between the measuring cell layer and the covering layer. The bottom most portion of the Suzuki et al. detector 120, i.e., the alleged "covering layer," is not directly between a measuring cell layer and covering layer. Therefore, Suzuki et al. do not disclose, or even suggest, all of the limitations of claims 1, 13 and 14.

To anticipate a claim, each and every element as set forth in the claim must be found in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). That is, the prior art must describe the elements arranged as required by the claims. In re Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). As indicated above, it is respectfully submitted that Suzuki et al. do not disclose, or even suggest, all of the limitations of claims 1, 13 and 14. It is therefore respectfully submitted that Suzuki et al. do not anticipate claim 1.

With regard to claims 3 to 9, 11 and 12, which ultimately depend from claim 1 and therefore include all of the limitations of claim 1, it is respectfully submitted that Suzuki et al. do not anticipate these dependent claims for at least the same reasons given above in support of the patentability of claim 1.

With further regard to claim 8, Applicants respectfully submit that Suzuki et al do not disclose, or even suggest, a layer-shaped heating conductor arranged in the layer plane of the layer structure to obtain an at least approximately homogeneous distribution of the heating power over a cross-section of the sensor element perpendicular to the layer structure. The Office Action alleges that Suzuki would inherently possess the claimed homogenous heat distribution. To rely on the doctrine of inherency, the Examiner must provide a "basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics necessarily flows from the teachings of the applied art." See M.P.E.P. § 2112; emphasis in original; and see, Ex parte Levy, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). The M.P.E.P. and the case law make clear that simply because a certain result or characteristic may occur in the prior art does not establish the inherency of that result or characteristic. Nowhere does the Office Action set forth any technical reasoning whatsoever to support its conclusion that Suzuki detector possesses a homogenous heat distribution. Applicants respectfully submit that the anode portion 124 on the top layer of the Suzuki et al. detector, which is not present on the bottom layer, skews the distribution of heat. Therefore, Applicants respectfully submit that Suzuki et al. do not render unpatentable claim 8 for this additional reason.

With further regard to claim 11, Applicants respectfully submit that Suzuki et al. do not disclose, or even suggest, that a measuring cell layer contacts a first planar surface of a heating element and a covering layer contacts a second opposing planar surface of the

heating element. As indicated above, the heating element of Suzuki et al. does not lie directly between the measuring cell layer and the alleged "covering layer." Therefore, Applicants submit that Suzuki et al. do not anticipate claim 11 for this additional reason.

For all of the foregoing reasons, withdrawal of this rejection is respectfully requested.

III. Rejection of Claims 1, 3 to 8, 10, 13 and 14 Under 35 U.S.C. § 102(b)

Claims 1, 3 to 8, 10, 13 and 14 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,505,807 ("Yamada"). Applicants respectfully submit that Yamada does not anticipate the present claims as amended for the following reasons.

The Office Action alleges that the lugs 4 and 5 of Yamada constitute a "covering layer," as recited in claims 1, 13 and 14. As indicated above, claims 1, 13 and 14 have been amended herein without prejudice to recite that the heating element is disposed ***directly*** between the measuring cell layer and the covering layer. Applicants respectfully submit that the Yamada heater element is not directly between the measuring cell layer and either of lugs 4, 5. Rather, as can be seen in Figure 1, a measuring cell layer lies between the heater element and each of lugs 4, 5. As detailed above, claims 1, 13 and 14 recite that the covering layer does not form part of an oxygen pump cell or an oxygen concentration cell. Therefore, Yamada et al. do not anticipate claims 1, 13 and 14.

With regard to claims 3 to 8 and 10, which ultimately depend from claim 1 and therefore include all of the limitations of claim 1, it is respectfully submitted that Yamada does not anticipate these dependent claims for at least the same reasons given above in support of the patentability of claim 1.

With further regard to claim 8, Applicants respectfully submit that Yamada does not disclose, or even suggest, a layer-shaped heating conductor arranged in a layer plane of a layer structure to obtain an at least approximately homogeneous distribution of heating power over a cross-section of a sensor element perpendicular to the layer structure. Applicants respectfully submit that Yamada does not anticipate claim 8 for this additional reason.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

IV. Rejection of Claims 1, 3 to 8, 10, 13 and 14 Under 35 U.S.C. § 103(a)

Claims 1 and 3 to 8, 10, 13 and 14 were rejected under 35 U.S.C. § 103(a) as unpatentable over Yamada. It is respectfully submitted that Yamada does not render unpatentable the present claims as amended herein for the following reasons.

The Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). As more fully set forth above, it is respectfully submitted that Yamada fails to disclose, or even suggest, a heating element disposed ***directly*** between the measuring cell layer and the covering layer, as recited in claims 1, 13 and 14. It is therefore respectfully submitted that Yamada does not render unpatentable amended claims 1, 13 and 14.

As for claims 3 to 8 and 10 which ultimately depend from claim 1 and therefore include all of the limitations of claim 1, it is respectfully submitted that Yamada does not render obvious these dependent claims for at least the same reasons given above in support of the patentability of claim 1. In re Fine, supra (any dependent claim depending from a non-obvious independent claim is non-obvious).

With further regard to claim 8, Applicants respectfully submit that Yamada does not disclose, or even suggest, a layer-shaped heating conductor is arranged in a layer plane of a layer structure to obtain an at least approximately homogeneous distribution of heating power over a cross-section of a sensor element perpendicular to the layer structure. Applicants respectfully submit that Yamada does not render unpatentable claim 8 for this additional reason.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

V. Rejection of Claims 1, 3 to 9, 11, 13 and 14 under 35 U.S.C. § 102(b)

Claims 1, 3 to 9, 11, 13 and 14 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,769,123 ("Mase et al."). Applicants respectfully submit that Mase et al. do not anticipate the present claims as amended for the following reasons.

Mase et al. purportedly relate to an electrochemical device.

Claims 1, 13 and 14 recite, inter alia, that the layer plane is at least approximately centered with respect to the sensor element. The Office Action alleges that because the various layers of the device are shown stacked on top and in-line with each other, all the various elements of the sensor would read on "at least approximately centered." The Office Action alleges that although this is not centered (namely centered with respect to the vertical layers), it reads on the claimed term. Applicants respectfully disagree for the following reasons.

Claims 1, 13 and 14 recite that the heating element is embedded in the heating element in a ***layer plane*** of the layer structure and that the ***layer plane*** is at least approximately centered with respect to the sensor element. Thus, the Office Action reflects an improper unrestricted reading of the phrase "at least approximately centered." To the extent that the heating element 62 of Mase et al. is arranged in a layer plane of a layer structure of a planar sensor element, Figures 1 to 6 make plain that such layer plane is not "at least approximately centered with respect to the sensor element." Therefore, Applicants respectfully submit that Mase et al. does not anticipate claims 1, 13 and 14.

With regard to claims 3 to 9 and 11, which ultimately depend from claim 1 and therefore include all of the limitations of claim 1, it is respectfully submitted that Mase et al. do not anticipate these dependent claims for at least the same reasons given above in support of the patentability of claim 1.

VI. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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